Proposal demographics

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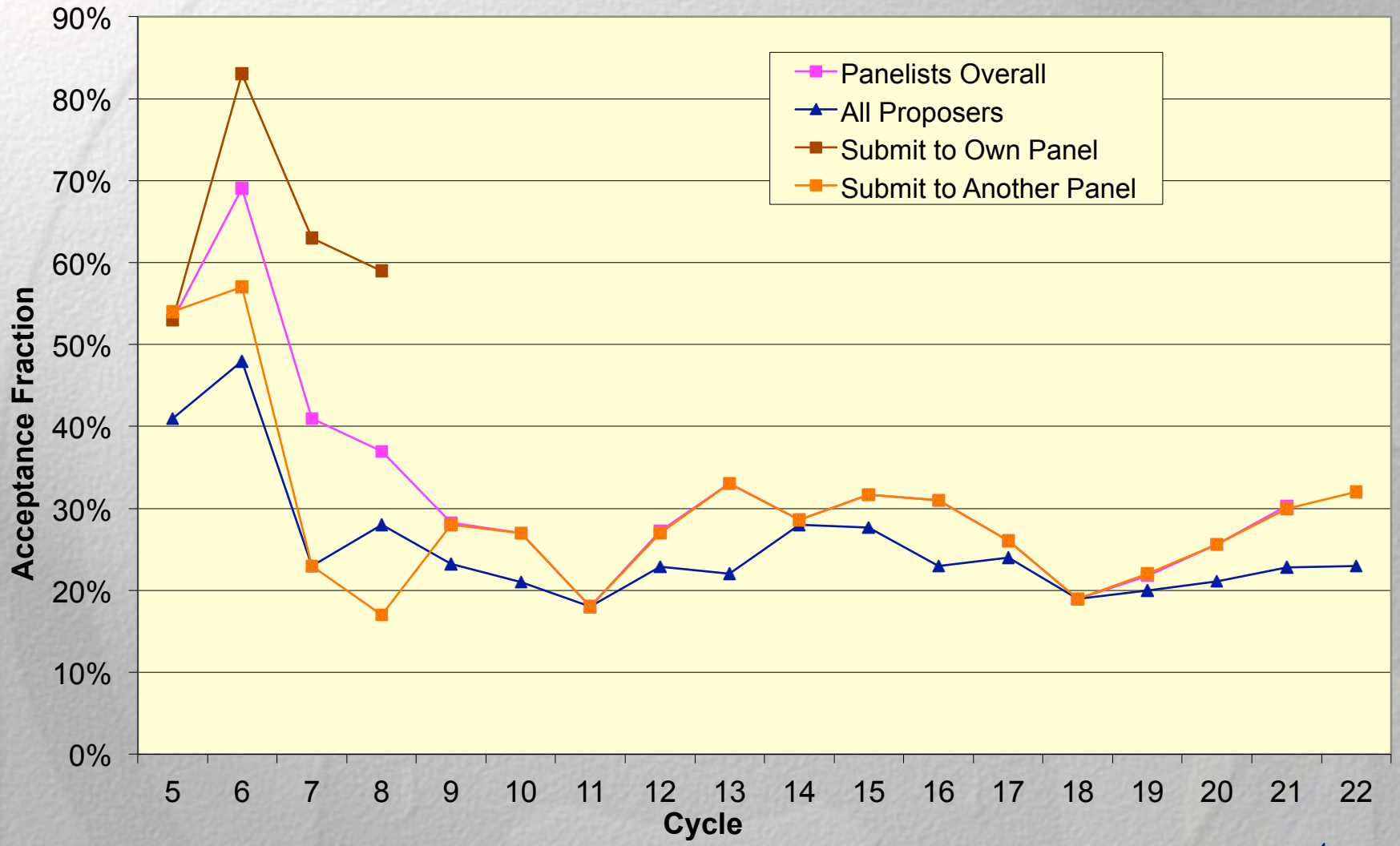
Outline

- Panelist acceptance rate
- Some more gender-related statistics (Cycle 19-22)
  - Triage statistics
  - Rankings pre- and post-discussion
  - Institutional statistics
- Summary

Panelist acceptance rate

Panelist acceptance rate



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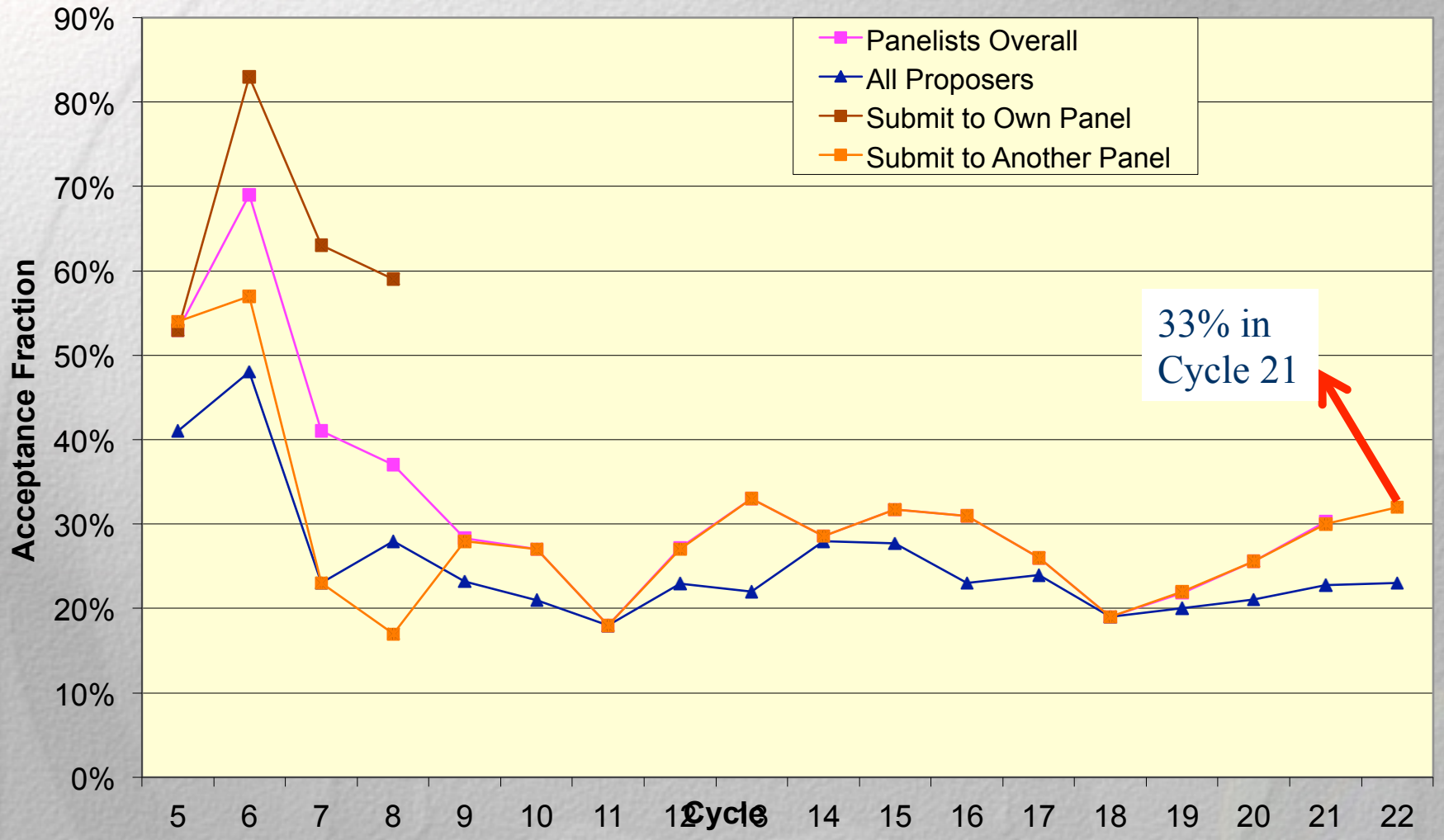

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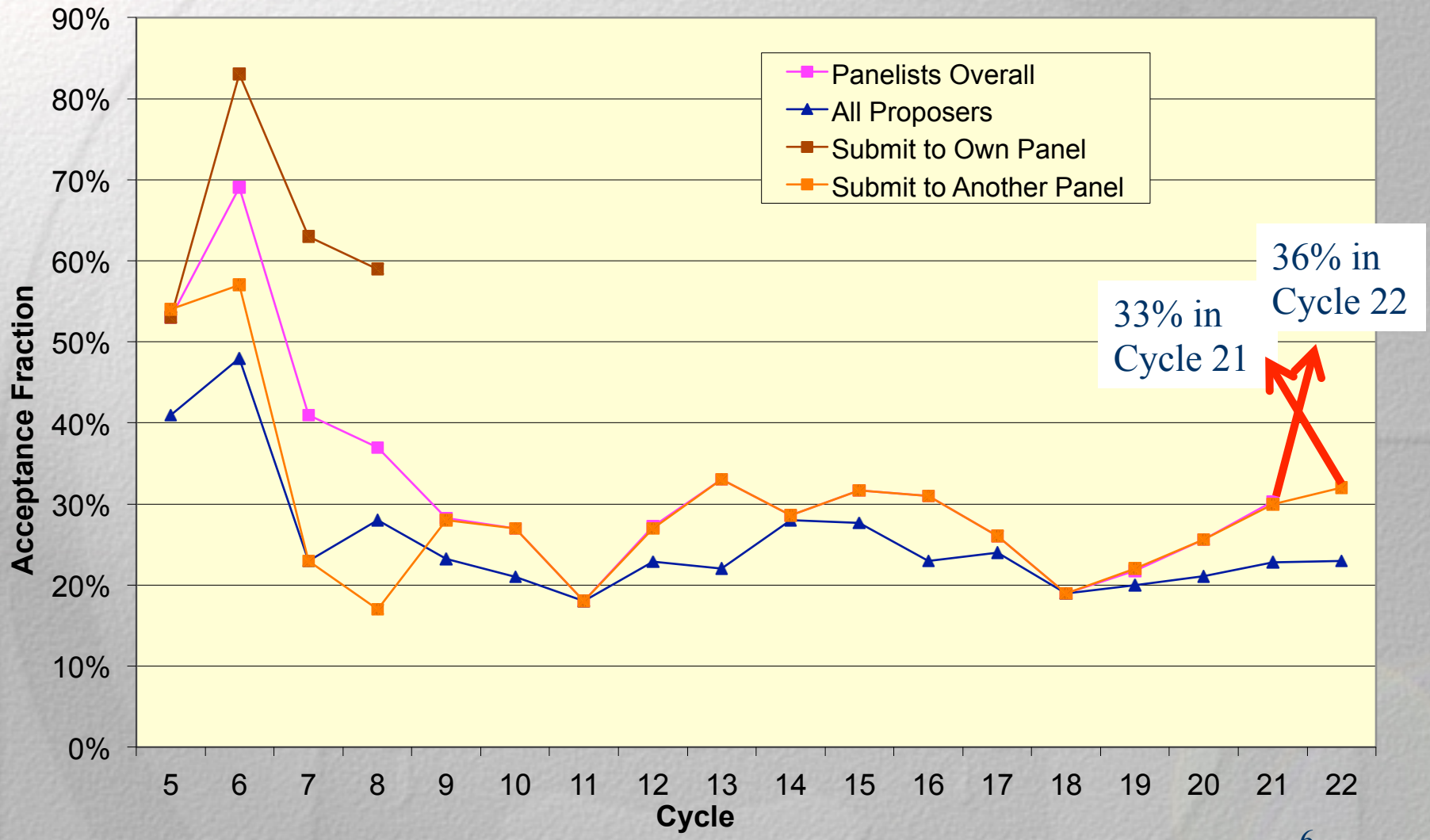

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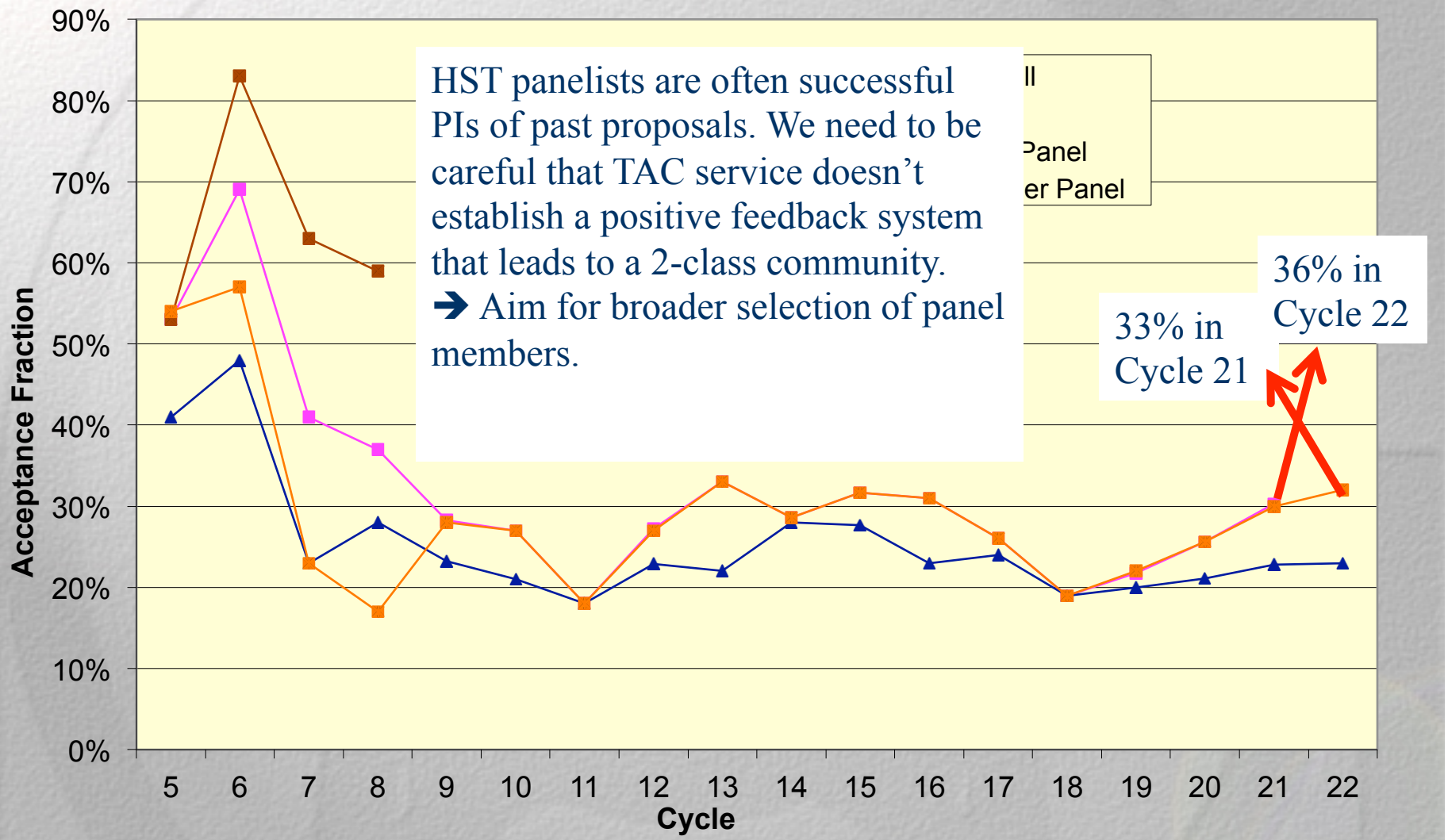
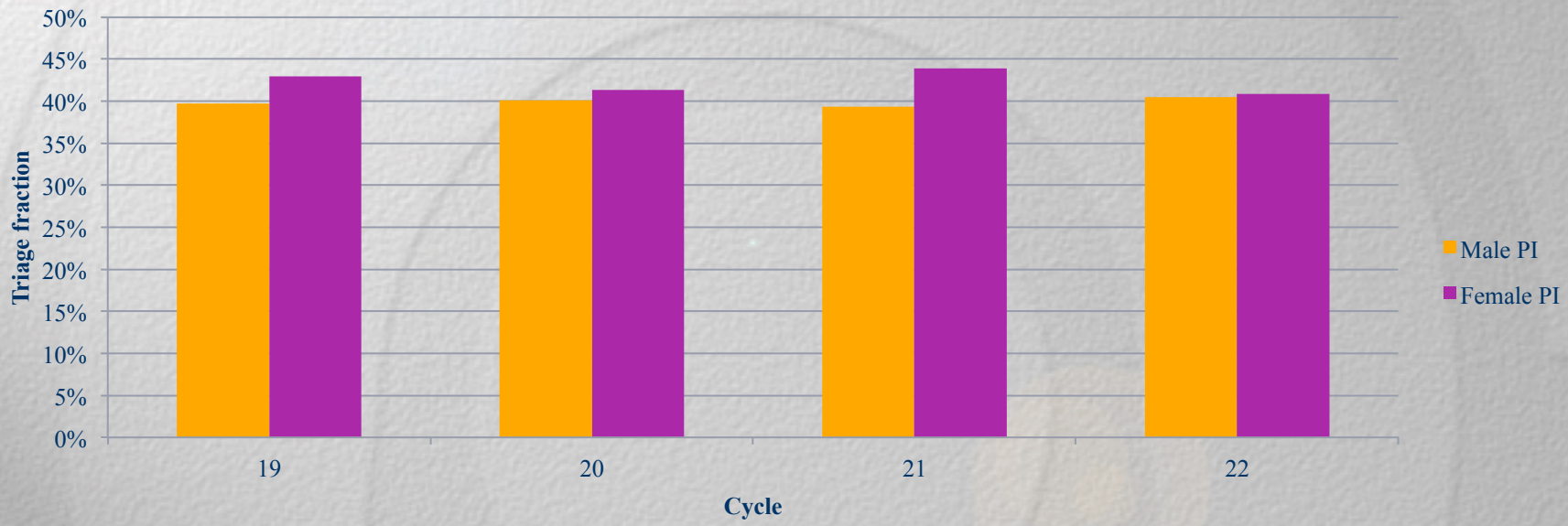


Triage

Triage – Cycles 19-22

Proposals led by female PIs are triaged at a higher rate in each cycle

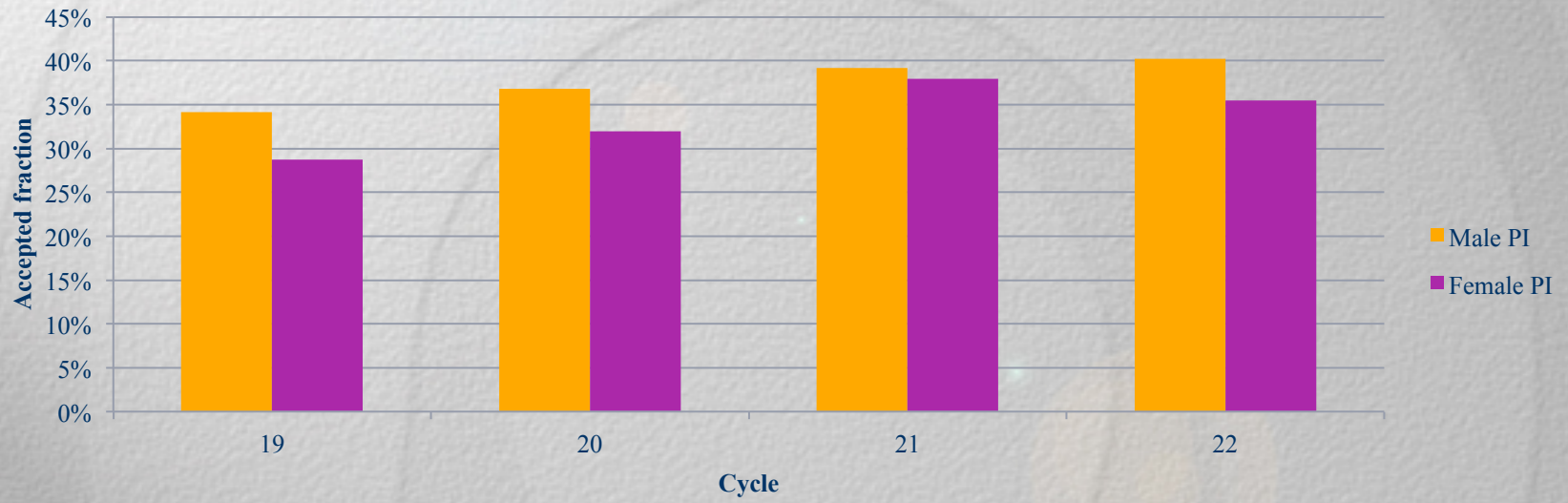


Over Cycles 19-22:

- Male PI triage fraction = 40%
- Female PI triage fraction = 42.5%

Statistics for panel proposals

If more female-led proposals are triaged, could that account for the gender offset in accepted proposals?



No – female-led proposals that are discussed by the panel have a lower success rate than the male-led proposals; the offset corresponds to 5-6 fewer proposals accepted than "expected".

Pre- and Post-discussion rankings

Methodology

- Based on the preliminary grades, we compute the percentile rankings for all proposals in each panel
- Compute the fraction of male-PI proposals in 10% bins (i.e <10%, 10-20% etc)
- Compute the fraction of female-PI proposals in 10% bins
- Repeat for final (post-discussion) grades
- In an ideal system, the top 10% of all proposals would include equal representation from male and female PIs i.e. top 10% male, top 10% female

Results

- Reviewed data for Cycles 19-22
- No consistent pattern emerges
  - Consider the top 20% of all ranked proposals
    - Proposals by female PIs are under-represented in both preliminary grades and final rankings for all cycles
      - 15-18% vs "expected" 20%
    - In three cycles, the proportion of proposals led by female PIs increased between the preliminary grades & final
    - In one cycle, the proportion decreased

Institutional

Institutional effects

- Is there a correlation between success rate and the (perceived?) "quality" of the parent institution?
  - Suggestion by STUC to segregate based on Carnegie rating (R1, R2 or other)
  - Relatively coarse ranking ➔ substantial majority of proposals came from research staff at R1 schools

Cycle 22	Male PI	Female PI	Fraction female PIs	$\%_{accepted}$ (male)	$\%_{acc}$ (female)
R1	532	201	27.4%	26.5%	20.4%
R2	53	13	19.7%	18.9%	30.7%
other	33	11	25.0%	18.2%	9.1%

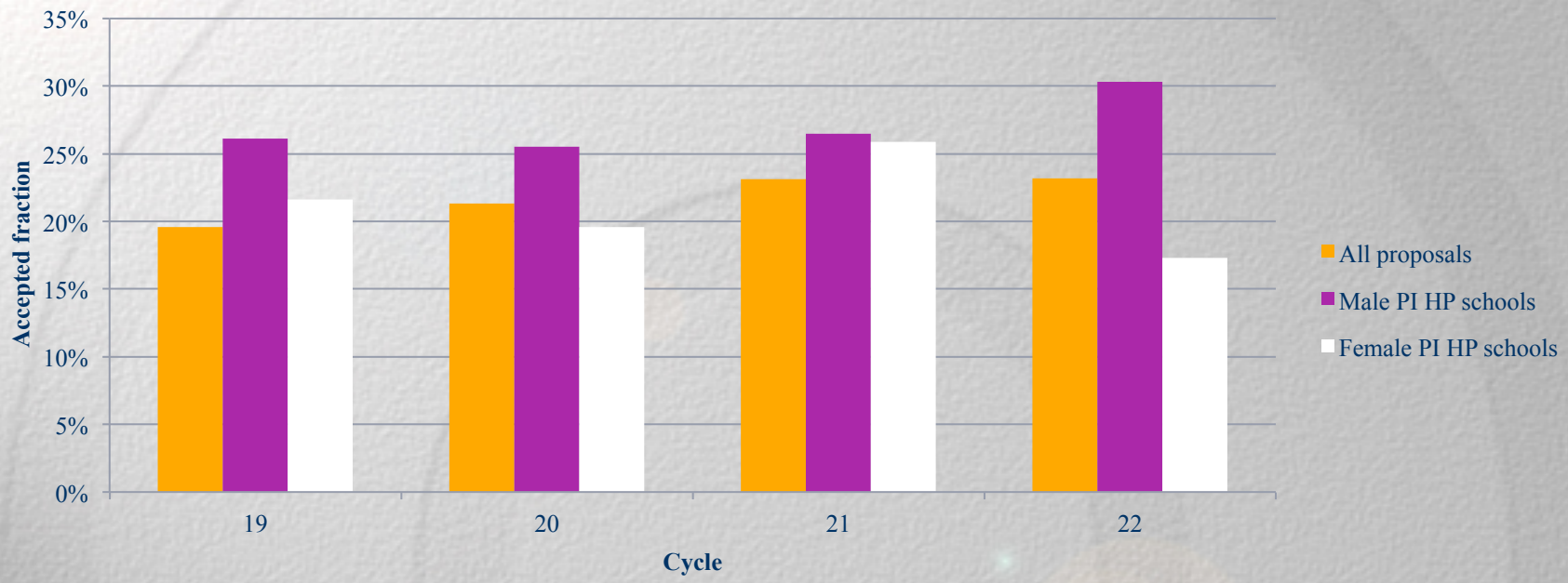
How do universities "rank" research institutions?

- **The Higher Education Evaluation & Accreditation Council of Taiwan has developed a series of metrics to rank academic institutions over a wide range of subjects**
- **See e.g.** http://ranking.heeact.edu.tw/en-us/2011/homepage/

- Metrics focus on publications and citations, combining long-term and short-term measurements
- Data are taken from the Web of Science (i.e. Science Citation Index)
- These statistics measure the *total* productivity of an institution
  - Generally, productivity scales with institutional size

- Astronomy is not included, but we use physics as a proxy to identify "high impact" institutions
- The top "highly productive" institutes by this metric include:
- Caltech, Harvard, UC Berkeley, U. Arizona, Cambridge, Princeton, JHU, UC Santa Cruz, Penn State, Maryland

Statistics for "highly productive" institutions



181-189 proposals/cycle from HP institutions:

~25% of the proposals have female PIs - comparable with the overall average

Proposals submitted by PIs from HP institutions have a higher success rate than the overall average.

The success rate of female PIs from those institutions is generally higher than the average success rate for female PIs, but lower than that of male PIs from those institutions

Summary so far:

- Panelists from recent HST TACs tend to have a higher proposal success rate than average
  - This holds whether they are or are not on the TAC
  - We will continue to work to broaden participation
- Proposals led by female PIs are triaged at a higher rate than average: 42.5% vs 40%
  - This doesn't account for the overall gender offset
- There is not a consistent pattern by gender in ranking changes between the preliminary grades and the final ranking
  - Discussion doesn't appear to have a one-sided effect
- Highly productive institutions (as measured by the Taiwan index) have higher success rates than the average
  - Female-led proposals tend to do better than the average, but are not as successful as male-led proposals from those institutions
- We are continuing to explore other parameters

What about Cycle 23?

Procedures

Proposal format:

- Retain format for title page and program files

TAC orientation

- The potential for unconscious bias will be highlighted
- Remind reviewers of the primary proposal assessment criteria
  - The scientific merit of the program and its contribution to the advancement of scientific knowledge
  - The program's importance to astronomy in general.
  - The extent to which the expertise of the proposers is sufficient to assure a thorough analysis of the data
  - The evidence for a coordinated effort to maximise the scientific return from the program
  - A demonstration of timely publication of the results of any previous programs,
- TAC discussion and comments should focus on those specific criteria

General considerations

We will continue to highlight the potential for unconscious bias

- This doesn't just mean gender bias

We will place a stronger focus on the criteria used to assess proposals

- Criteria have been revised based on consultation with the STUC

We will continue to monitor the TAC process closely

- Panel support scientists monitor grades and can flag anomalies
- SMO staff & other observers sit in on discussions and keep an ear open for inappropriate comments

We will continue to remind panel chairs that discussion should focus on information pertinent to the proposal

- Panelists must avoid the temptation to editorialise